



**PATENT APPLICATION**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
In re the Application of

Satoru MIYASHITA et al.

Group Art Unit: 1773

Application No.: 09/901,097

Examiner: D. Lawrence Tarazano

Filed: July 10, 2001

Docket No.: 101050.02

For: METHOD OF MANUFACTURING ORGANIC EL ELEMENT,  
ORGANIC EL ELEMENT, AND ORGANIC EL DISPLAY DEVICE

**REQUEST FOR RECONSIDERATION**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In reply to the October 24, 2003 Office Action, reconsideration of this application is respectfully requested in light of the following remarks.

Claims 25-46 and 54-78 are pending.

Applicants gratefully acknowledge the Office Action's indication that claims 36-46 and 54-77 are allowed, and that claims 27, 28 and 30-34 include allowable subject matter.

Applicants appreciate the courtesies shown to Applicants' representatives by Examiner Tarazano and SPRE Tierney in the September 11, 2003 personal interview.

**I. Claims 25, 26, 29 and 35 Satisfy the Requirements of 35 U.S.C. §112, First Paragraph**

**A. Claims 25, 26, 29 and 35 Satisfy the Written Description Requirement**

The Office Action rejects claims 25, 26, 29 and 35 under 35 U.S.C. §112, first paragraph, for failure to satisfy the written description requirement. The Office Action

asserts that claims 25, 26, 29 and 35 contain subject matter that is not sufficiently described in the specification contrary to §112, first paragraph.

The Office Action, at pages 2 and 6, admits that the organic materials disclosed in the present specification are semiconducting organic materials. However, the Office Action asserts that the claims are much broader than the original disclosure. Specifically, the Office Action, at page 2, asserts as follows:

[t]here are semiconductor materials, which are not suitable for the production of electro luminescent devices, and these materials would be outside of the original disclosure. The amended claims encompass materials that the applicants had never conceived of being used in their invention. Semiconductor materials are used in other applications, such as transistors, capacitors, etc all of which are outside the scope of the original disclosure.

Applicants respectfully traverse the rejection as discussed below.

To satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991) An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention.

*Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997) (emphasis added). Possession may be shown in a variety of ways including description of an actual reduction to practice, or by showing that the invention was “ready for patenting” such as by the disclosure of drawings or structural chemical formulas that show that the invention was complete, or by describing distinguishing identifying characteristics sufficient to show that the applicant was in possession of the claimed invention. See, e.g., *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 68, 119 S. Ct. 304, 312, 48 USPQ2d 1641, 1647 (1998).

Applicants respectfully submit that the specification discloses numerous materials that the Office Action admits to be semiconducting organic materials, and discloses that they may be ink-jetted. Thus, the specification clearly supports the claimed feature of ink-jetting semiconductor organic materials. In order to satisfy the written description requirement of 35 U.S.C. §112, first paragraph, the specification would not have to list all semiconducting organic materials.

Specifically, the present specification describes an organic EL element, an organic EL display device, and a method of manufacturing an organic EL element and EL display device. The present specification, in the context of manufacturing an organic EL element and EL display device, fully and clearly describes depositing an organic material in a solvent on a substrate by ink-jet printing. The Office Action, at pages 2 and 6, admits that the organic materials disclosed in the present specification are semiconducting organic materials.

Independent claim 25 recites, *inter alia*, "depositing a semiconducting organic material in a solvent onto a substrate by ink-jet printing". Because the present specification fully and clearly describes depositing materials that are semiconducting organic materials by ink-jet printing, under US case law and Patent Office rules, the written description clearly and fully shows that the inventors had possession of the claimed invention set forth in claims 25, 26, 29 and 35, i.e., "depositing a semiconducting organic material in a solvent onto a substrate by ink-jet printing". The fact that the specification discloses ink-jetting materials that are semiconducting and organic in the specific context of forming EL devices does not negate the fact that the written description of the specification is adequate for reasons indicated above. Thus, Applicants respectfully submit that the present specification meets the written description requirement of §112, first paragraph.

Furthermore, the present specification, at page 12, lines 31-34, even discloses semiconducting organic materials, such as, for example polyalkylthiophene, poly(2,5-thienylene vinylene), polyarylene vinylene, polyparaphenylene, polyalkylfluorene. These

materials are well known in the art to be suitable for the production of transistor devices as well as EL devices.

For example, "Macromolecular electronic device: Field-effect transistor with a polythiophene thin film," A. Tsumura et al., Applied Physics Letters, Vol. 49(18), pp. 1210-1212 (November 3, 1986), at Abstract (copy enclosed), explicitly states that "[t]he first solid-state field-effect transistor has been fabricated utilizing a film of an organic macromolecule, polythiophene, as a semiconductor". (Emphasis added)

Further, "Organic Semiconductors for Plastic Electronics," Z. Bao et al., Bell Laboratories, (copy enclosed), pp. 1-2, explicitly discloses semiconducting organic materials, such as, for example polyalkylthiophene, poly(2,5-thienylene vinylene) disclosed in the present specification, that are used to manufacture organic and polymeric thin-film metal-insulator-semiconductor field-effect transistors (MISFETs).

Thus, contrary to the Office Action's assertion, the present specification, discloses ink-jetting of semiconductor organic materials that are not limited to use in the production of EL devices. Applicants respectfully submit that the present specification meets the written description requirement of §112, first paragraph.

Withdrawal of the rejections of claims 25, 26, 29 and 35 under 35 U.S.C. §112, first paragraph, is respectfully requested.

B. The Specification Fully and Clearly  
Enables the Scope of Claims 25, 26, 29 and 35

The Office Action also rejects claims 25, 26, 29 and 35 under §112, first paragraph, as being based on a non-enabling disclosure. The Office Action asserts that an electroluminescent layer is critical or essential to the practice of the invention, yet this feature is not included in the claims.

The Office Action further asserts that claims 25, 26, 29 and 35 are directed generically to semiconductor materials, while the original disclosure was directed to

electroluminescent devices, and that there is no provision in the disclosure to produce any devices other than EL devices. Thus, the Office Action asserts that the original disclosure's failure to disclose applications other than the production of EL devices makes this a critical feature of the invention that must be included in the rejected claims.

Applicants respectfully traverse the rejection as discussed below.

Under the 35 U.S.C. §112, first paragraph, enablement requirement, the specification must describe how to make and how to use the invention so as to enable any person skilled in the art to make and use the claimed invention. The test for enablement is whether one reasonably skilled in the art could make and use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. *In re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988). A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987)

As discussed above, the present specification, in the context of manufacturing an organic EL element and EL display device, fully and clearly describes depositing materials that are semiconducting and organic in a solvent on a substrate by ink-jet printing. The Office Action, at pages 2 and 6, admits that the organic materials disclosed in the present specification are semiconducting.

Thus, one reasonably skilled in the art, by reading the disclosure in the present specification and with information known in the art, could make and use the invention set forth in claims 25, 26, 29 and 35 without undue experimentation, i.e., "depositing a semiconducting organic material in a solvent onto a substrate by ink-jet printing". The fact that the specification discloses ink-jetting materials that are semiconducting and organic in the context of making an EL device does not make the specification non-enabling.

Furthermore, while the present specification may focus on forming EL devices, the present specification, at page 12, lines 31-34, also discloses semiconducting organic materials, such as, for example, polyalkylthiophene, poly(2,5-thienylene vinylene), polyarylene vinylene, polyparaphenylene, polyalkylfluorene. As discussed above, these materials to be well known to those skilled in the art to be used for the production of transistor devices as well as EL devices.

The Office Action, at pages 2-3, is attempting to unduly limit claim 25 to EL devices by asserting that the semiconducting organic materials disclosed in the present specification can only be used to form an electroluminescent layer. However, under U.S. case law (and Patent Office rules), this §112, first paragraph, rejection is improper absent clear language in the specification that a luminescent layer is critical for the claimed invention to function as intended. Applicants respectfully submit that one of ordinary skill in the art would be able to ink-jet the semiconducting organic materials disclosed in the present specification regardless of the device being formed.

Thus, contrary to the Office Action's assertion, one reasonably skilled in the art, by reading the disclosure in the present specification and with information known in the art, could make and use the invention set forth in claims 25, 26, 29 and 35 without undue experimentation, i.e., "depositing a semiconducting organic material in a solvent onto a substrate by ink-jet printing".

Applicants respectfully submit that the present specification meets the enabling requirement of §112, first paragraph.

Withdrawal of the rejection of claims 25, 26, 29 and 35 under 35 U.S.C. §112, first paragraph, is respectfully requested.

## II. Claims 25, 26, 29, 35 and 78 Define Allowable Subject Matter

The Office Action rejects claims 25, 26, 29, 35 and 78 under 35 U.S.C. §102(b) over U.S. Patents Nos. 5,250,439 and 5,202,261 to Musho et al. (hereinafter "Musho '439" and "Musho '261"); and rejects claims 25, 26, 29, 35 and 78 under 35 U.S.C. §103(a) as being obvious over Musho '439.

Applicants respectfully traverse the rejections.

Neither Musho '439 nor Musho '261 discloses, teaches or suggests a "process for forming a pattern on a substrate by deposition of an organic material comprising... depositing a semiconducting organic material in a solvent onto a substrate by ink-jet printing" as set forth in independent claim 25.

In accordance with U.S. case law "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. " *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). The identical invention must be shown in as complete detail as is contained in the ...claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). The elements must be arranged as required by the claim, .... *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990) (emphasis added).

An Examiner must consider the language of the preamble of the claim. "If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165-66 (Fed. Cir. 1999) (emphasis added).

The Office Action, at page 4, asserts as follows:

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even if the preamble was considered to "breath life and meaning" to the claimed process, the examiner notes that no particular pattern is required. The examiner takes the position that what is produced in Musho et al. is a "solid pattern" based on the way it was formed.

(emphasis added)

Applicants respectfully disagree with the Examiner's position that the applied art discloses "forming a pattern on a substrate", as recited in claim 25.

Webster's Third New International Dictionary of the English Language (unabridged), at page 1657 (copy enclosed), defines "pattern" as a "mechanical design or form: as **a**: the shape or style of a manufactured article". Under this definition, "forming a pattern on a substrate" is interpreted as forming a particular design arrangement or structure on a substrate. In the present application, "forming a pattern on a substrate" is disclosed in the context of forming organic semiconductor devices, which require precise design arrangement and/or structure of the deposited organic semiconducting material on the substrate.

On the contrary, in Musho '439 and Musho '261, there is no need to form a pattern, i.e., a particular design arrangement, for the film/layer 16 in the diagnostic test device 10. In Musho '439 and '261, the only requirement is that the film/layer 16 is formed of a certain thickness. (See Musho '439, at col. 31, lines 14-18)

Further, both Musho '439 and Musho '261 are devoid of any disclosure of "forming a pattern...by ink-jet printing", as set forth in claim 25. The Office Action, at page 4, asserts that "the term 'ink-jet printing inherently means that a design or 'pattern' is formed, even if this is on a microscopic scale based on the way the ink is laid down."

Applicants respectfully disagree with the Office Action's assertion.

As discussed above, in Musho '439 and Musho '261, there is no need to form a pattern for the film/layer 16. While Musho '439 teaches various methods of forming film/layer 16,



including using jet printing, all that is required in Musho '439 and Musho '261 is that the film/layer have a particular thickness.

Thus, Applicants respectfully submit that neither Musho '439 nor Musho '261 anticipate or render obvious a process for forming a pattern on a substrate by deposition of an organic material comprising, inter alia, depositing a semiconducting organic material in a solvent onto a substrate by ink-jet printing, as claimed in independent claim 25.

For at least these reasons, Applicants respectfully submit that claim 25 is patentable over the applied references. Claims 26, 29, 35 and 78, which depend from claim 25, are also patentable over the applied references for at least the reasons discussed above. Withdrawal of the rejections of claims 25, 26, 29, 35 and 78 under 35 U.S.C. §102(b) and 35 U.S.C. §103(a) is respectfully requested.

### **III. Conclusion**

In view of the foregoing discussion, Applicants respectfully submit that the specification, as originally filed, meets the written description and enabling requirements of §112, first paragraph. Further Applicants respectfully submit that Musho '439, alone or in combination with Musho '261, fails to anticipate or render obvious claims 25, 26, 29, 35 and 78.

In view of the foregoing remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance of claims 25, 26, 29, 35 and 78, and declaration of a consolidated interference as defined in Applicants' February 27, 2002, Request for Declaration of Interference and Petition for Consolidation of Three Interferences (decided July 3, 2002), are earnestly solicited.

Should the Examiner believe that anything further is desirable in order to place this application in better condition for allowance and declaration of an interference, the Examiner is requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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JAO:GPS/jam

Attachments:

Webster's Third New International Dictionary, page 1657  
Information Disclosure Statement w/ Form-1449

Date: January 26, 2004

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